

JUNIOR HIGH SCIENCE
INVESTIGATION 8
HOW DOES RADON GET INTO YOUR HOME?

- CCS 3.2** (Writing) All students will write in clear, concise, organized language that varies in content and form for different audiences and purposes.
- B.3 Grade 6 Write grade-appropriate, multi-paragraph expository pieces across curricula (e.g., problem/solution, cause/effect, hypothesis/results, feature articles, critiques, or research reports).
- CCS 3.5** (Viewing and media literacy) All students will access, view, evaluate, and respond to print, non-print, and electronic texts and resources.
- A.6 Grade 4 Demonstrate an awareness of different media forms and how they contribute to communication.
- B.1 Grade 6 Understand the uses of technology (e.g., the Internet for research).
- CCS 4.1** (Number and numerical operations) All students will develop number sense and will perform standard numerical operations and estimations on all types of numbers in a variety of ways.
- C.1 Grade 6 Use a variety of strategies for estimating both quantities and the results of computations.
- C.2 Grade 6 Recognize when an estimate is appropriate, and understand the usefulness of an estimate as distinct from an exact answer.
- C.3 Grade 8 Recognize the limitations of estimation and assess the amount of error resulting from estimation.
- CCS 4.2** (Geometry and measurement) All students will develop spatial sense and the ability to use geometric properties, relationships, and measurement to model, describe and analyze phenomena.
- A.1 Grade 8 Understand and apply concepts involving lines, angles, and planes.
- Complementary and supplementary angles
 - Vertical angles
 - Bisectors and perpendicular bisectors
 - Parallel, perpendicular, and intersecting planes
 - Intersection of plane with cube, cylinder, cone, and sphere
- D.4 Grade 8 Select and use appropriate units and tools to measure quantities to the degree of precision needed in a particular problem-solving situation.

- E.1 Grade 8 Develop and apply strategies for finding perimeter and area.
- Geometric figures made by combining triangles, rectangles and circles or parts of circles
 - Estimation of area using grids of various sizes
 - Impact of a dilation on the perimeter and area of a 2-dimensional figure

- E.3 Grade 8 Develop and apply strategies and formulas for finding the surface area and volume of a three-dimensional figure.
- Volume - prism, cone, pyramid
 - Surface area - prism (triangular or rectangular base), pyramid (triangular or rectangular base)
 - Impact of a dilation on the surface area and volume of a three-dimensional figure

CCS 4.4 (Data analysis, probability, and discrete mathematics) All students will develop an understanding of the concepts and techniques of data analysis, probability, and discrete mathematics, and will use them to model situations, solve problems, and analyze and draw appropriate inferences from data.

- A.2 Grade 6 Read, interpret, select, construct, analyze, generate questions about, and draw inferences from displays of data.
- Bar graph, line graph, circle graph, table, histogram
 - Range, median, and mean
 - Calculators and computers used to record and process information

CCS 4.5 (Mathematical processes) All students will use mathematical processes of problem solving, communication, connections, reasoning, representations, and technology to solve problems and communicate mathematical ideas.

- A.1 Grade All Learn mathematics through problem solving, inquiry, and discovery.
- A.2 Grade All Solve problems that arise in mathematics and in other contexts (cf. workplace readiness standard 8.3).
- Open-ended problems
 - Non-routine problems
 - Problems with multiple solutions
 - Problems that can be solved in several ways
- C.2 Grade All Use connections among mathematical ideas to explain concepts (e.g., two linear equations have a unique solution because the lines they represent intersect at a single point).
- C.4 Grade All Apply mathematics in practical situations and in other disciplines.

- E.1 Grade All Create and use representations to organize, record, and communicate mathematical ideas.
- Concrete representations (e.g., base-ten blocks or algebra tiles)
 - Pictorial representations (e.g., diagrams, charts, or tables)
 - Symbolic representations (e.g., a formula)
 - Graphical representations (e.g., a line graph)

CCS 5.1 (Scientific Processes) All students will develop problem-solving, decision-making and inquiry skills, reflected by formulating usable questions and hypotheses, planning experiments, conducting systematic observations, interpreting and analyzing data, drawing conclusions, and communicating results.

B.1 Grade 4 Develop strategies and skills for information-gathering and problem-solving, using appropriate tools and technologies.

A.2 Grade 8 Communicate experimental findings to others.

CCS 5.3 (Mathematical applications) All students will integrate mathematics as a tool for problem-solving in science, and as a means of expressing and/or modeling scientific theories.

D.1 Grade 8 Represent and describe mathematical relationships among variables using:

- graphs
- tables
- charts

CCS 5.4 (Nature and process of technology) All students will understand the interrelationships between science and technology and develop a conceptual understanding of the nature and process of technology.

C.1 Grade 4 Describe a product or device in terms of the problem it solves or the need it meets.

B.1 Grade 8 Analyze a product or system to determine the problem it was designed to solve, the design constraints, trade-offs and risks involved in using the product or system, how the product or system might fail, and how the product or system might be improved.